in Step E, the receiving gain is decreased by a step length ranging from 6dB to 24dB.

REMARKS

Claims 1-7 and pending and all stand rejected. Applicant has amended claim 1 and respectfully submits that claims 1-7 are allowable as amended.

Claim Objections

Claim 1 has been objected to as including term that lack antecedent basis. Applicant has amended claim 1 to overcome the objection. Specifically:

The wording "the initial cell searching" first appeared in claim 1 is modified into "an initial cell searching";

The wording "the user terminal" first appeared in claim 1 is modified into "a user terminal";

The wording "the selected carrier frequency" first appeared in claim 1 is modified into "a selected carrier frequency";

The wording "the DwPTS position" first appeared in claim 1 is modified into "a DwPTS position";

The wording "the succeeding procedure" first appeared in claim 1 is modified into "a succeeding procedure"; and

The wording "the receiver" first appeared in claim 1 is modified into "a receiver".

Claim Rejections – 35 U.S.C. § 103

Claims 1-7 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Li et al (U.S. Publication No. 2003/0031238) in view of Demir et al. (U.S. Patent No. 7,308,258). Applicant respectfully submits that the claims 1-7 are allowable as amended.

As amended, claim 1 recites a gain control method for a initial cell searching in TD-SCDMA mobile communication system, said gain control method comprising:

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Step A: a user terminal receiving data in the maximum receiving gain at a selected carrier frequency;

Step B: recording the received data of a plurality of subframes;

Step C: determining a DwPTS position of each received subframe by using a time window decision method;

Step D: performing a succeeding procedure of the initial cell searching and returning to execute Step A subsequently when the DwPTS positions of the most received subframes can be determined, and executing Step E when the DwPTS positions of the most received subframes can not be determined; and

Step E: judging whether a receiver is in saturation, wherein, returning to execute Step A subsequently when the receiver is not in saturation, and decreasing the receiving gain by a step length and returning to execute Step B subsequently when the receiver is in saturation.

Li et al (US 20030031238) discloses a method for initial search in a CDMA mobile communication system, the method comprising:

The user equipment receives a complete data frame. (Fig.3, #6)

Starting an uninterrupted procedure from recovering carrier frequency difference until higher frequency accuracy is obtained by using midamble. (Fig.4)

Step 1, searching a rough position range of DwPTS by using the power characteristic window value method and defining the working frequency point. (Fig.1, #1)

Step 2, searching for an accurate receiving position by using a conventional solving correlation method in the position range defined by Step 1, and obtaining accurate receiving position;

Step 3, starting to recover carrier frequency difference based on the joint detection method of carrier frequency difference correction. (pg.4, pp0056, lines 8-13)

Thus, Li at least fails to teach or suggest the limitations "Step A: a user terminal receiving data in the maximum receiving gain at a selected carrier frequency;

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Step D: performing a succeeding procedure of the initial cell searching and returning to execute Step A subsequently when the DwPTS positions of the most received subframes can be determined, and executing Step E when the DwPTS positions of the most received subframes can not be determined; and

Step E: judging whether a receiver is in saturation, wherein, returning to execute Step A subsequently when the receiver is not in saturation, and decreasing the receiving gain by a step length and returning to execute Step B subsequently when the receiver is in saturation."

Furthermore, Li teaches away from the invention claimed in the present application. The technical problem to be solved by Li is mentioned on Paragraph [0011] of Li, where it is stated that the method proposes a solution for downlink synchronization and carrier deviation correction during cell initial search. With this solution the UE can rapidly and accurately perform downlink synchronization with a base station and has a better effect for carrier deviation correction.

In contrast, the technical problem to be solved is mentioned on Paragraph [0015] of the present invention, where it is stated that the object of the present invention is to complete the initial cell searching rapidly under the condition of limited dynamic range by using the user terminal ADC.

Thus, Li seeks to solve a different technical problem than, and teaches away from, the invention claimed in the present application. Hence, the claim invention is not obvious in light of Li.

US Patent No. 7,308,258 (hereinafter referred as Demir) discloses unsuitable cell exclusion in wireless communication systems, comprising:

If there are additional gain settings left, the automatic gain controller (AGC) of the WTRU is set to the next gain setting. (Col.8, lines 30-35)

In the exhaustive cell search procedure, any detected cells are detected at the highest peak. Therefore, if the BCH cannot be read with the detected highest peak, there is no point in further

searching for subsequent peaks with less energy in that frequency and the frequency should therefore be excluded. (Col.7, lines 25-30)

WTRU is looking for the PSC correlator peak location with the highest power. (Col.7, lines 50-55)

If there are gain settings left, the AGC is set to the next lowest gain setting. The reason why gain settings are utilized from highest to lowest is that, if an input signal is saturated by a high gain level, there will be degradation in detection performance; however, a signal may still be detected. If the signal degradation due to saturation is too much that the signal cannot be detected, a lower gain setting will reduce the amount of saturation thereby increasing the chances of being able to detect the signal. (Col.9, lines 55-65)

Comparing claim 1 of the present invention with Demir, it can be seen that Demir fails to teach or suggest the limitations "Step A: a user terminal receiving data in the maximum receiving gain at a selected carrier frequency; Step D: executing Step E when the DwPTS positions of the most received subframes can not be determined; and Step E: judging whether a receiver is in saturation, wherein, returning to execute Step A subsequently when the receiver is not in saturation." It means that when the DwPTS positions of the most received subframes can not be determined and the receiver is not in saturation, the user terminal receives data in the maximum receiving gain at another selected carrier frequency. Consequently, the present invention does not need use AGC to reduce the amount of saturation thereby increasing the chances of being able to detect the signal at the same selected carrier frequency. That is, for a selected carrier frequency, the technical solution of the present invention completes signal detection only one time, but Demir completes signal detection time after time by using AGC.

In addition, the technical problem to be solved is mentioned on Column 2, lines 6-8 of Demir, where it is stated that a method and system for performing initial cell search in wireless communication system wherein unsuitable cells are excluded.

The objective technical problem to be solved is mentioned in the description of the present invention, where it is stated that the object of the present invention is to complete the initial cell searching rapidly under the condition of limited dynamic range by using the user terminal ADC.

Thus, the technical problem of Li and the present invention are different.

Based on the above reasons, the Applicant respectfully submits that both Li and Demir fail to teach the limitations "Step A: a user terminal receiving data in the maximum receiving gain at a selected carrier frequency; Step D: executing Step E when the DwPTS positions of the most received subframes can not be determined; and Step E: judging whether a receiver is in saturation, wherein, returning to execute Step A subsequently when the receiver is not in saturation". For at least these reasons, the Applicant respectfully requests withdrawal of the rejection under 35 U.S.C.§103 and allowance of claim 1.

Because claim 1 is non-obvious, dependent claims claims 2-7 are also non-obvious. For at least these reasons, the Applicant respectfully requests withdrawal of the rejection under 35 U.S.C.§103 and allowance of claims 2-7.

Summary

In view of the above amendments and remarks, Applicant respectfully requests a Notice of Allowance. If the Examiner believes a telephone conference would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the below-listed telephone number.

Respectfully submitted,

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